The feasibility of measuring body weight on CT images and the first steps in anatomical mirroring.

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Objective

To estimate body weight using the data of a post mortem total body CT scan and establish its efficacy in a forensic context.

Material and Method(s)

PMCT data were used to compute fat, soft tissue and bone volume using in house developed software based on density and HU. The digitally calculated body weight was then compared with the measured body weight on autopsy.

Results

Analysis of the obtained results showed a good correlation between the measured body weight and the CT-derived body weight. The highest discrepancies were noticed in children and decomposed bodies presumably due to different bone mineralization in children versus adults and putrefactive gas formation and liquefaction in decomposed bodies. In general, there was no distinct consistent over- or underestimation. In case of partial scans, where a body part was not scanned or was missing, mirroring the unaffected side was seen to give equally good results.

Conclusion

The weight of a body can be sufficiently estimated using volume measurements of different body tissues obtained from the PMCT data. This technique can be applied when concern is raised about the documented body weight, or if weighing was omitted all together. Furthermore the aforementioned body weight estimates can be useful in case of mass casualties, for victim identification purposes, or in case of traumatic deaths (e.g. dismemberments).